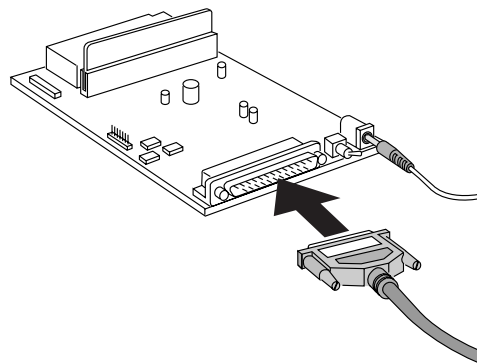

MTP Writer System

for EM55M450/Q450
eSTM060/Q060
EM73MA89B
EM55M300

USER'S GUIDE

(Applicable to MTP Writer Driver Version 3.5 & later)

Doc. Version V1.2



ELAN MICROELECTRONICS CORP.

January 2005



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Revision History

Version		Revision Description	Date
MTP Writer	Doc.		
3.3	1.0	Initial version	2002/12/31
3.4	1.1	Removed EM55P450	2003/01/28
3.5	1.2	Added eSTM060 and eSTQ060	2005/01/15

Chapter 1

Overview

The MTP Writer System (Writer) is a user-friendly tool that is used to write user programs into ELAN chips. The system consisted of a software (MTP Writer V3.5) and a hardware (Main Board V4.0) device that supports MTP (Multi-Times Programming) for **EM55M300**, **EM73MA89B**, **EM55M450** and **eSTM060**).

The Writer System can also be used to read data (if not security protected) from the above stated IC's and can read customer ID number from the pre-programmed **EM55Q450** and **eSTQ060** IC's. Furthermore, it can also read checksum (pass, no pass only) and user ID information (in addition to data) from **EM55M450** and **eSTM060**.

This manual covers the details of both hardware and software for the ELAN MTP Writer System.

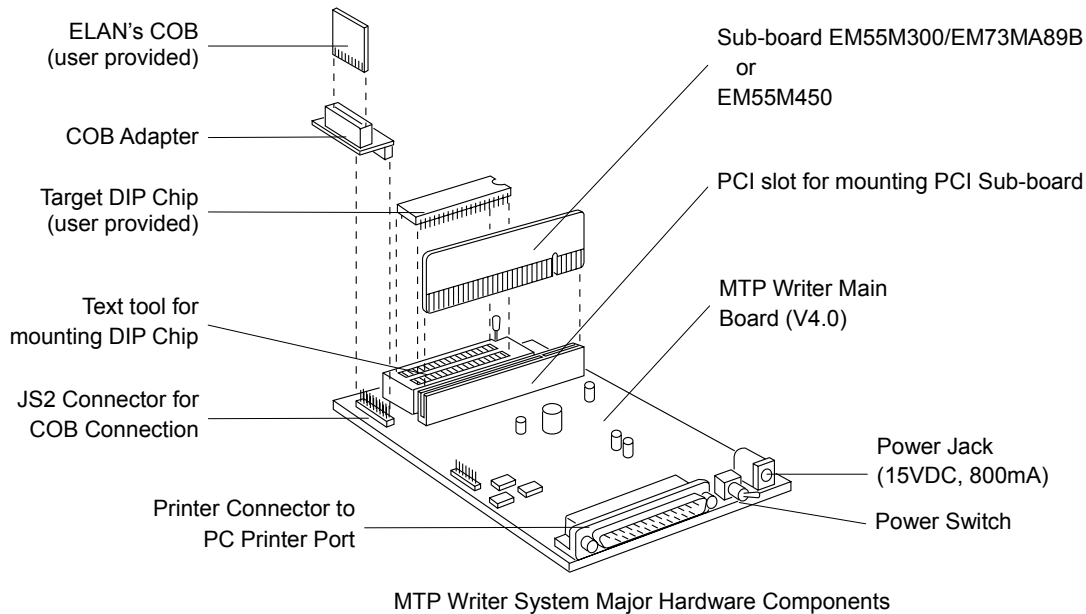
1.1 What You Should Get

In addition to Writer driver, the complete set of MTP Writer System comprises of the following hardware modules and accessories:

- A Writer Main Board (version 4.0)
- Two MTP Chip Programming PCI Sub-boards (V3.0), i.e.,
EM55M300/EM73MA89B Sub-board and EM55M450 Sub-board
- COB (chip on board) Socket Adapter for COB's separately ordered from ELAN.
- AC Power Adapter
 - Input : AC 100V-240V 50-60Hz 0.5A max
 - Output : DC 15V, 800mA
- Printer Port Cable

NOTE

Visit the ELAN website //www.emc.com.tw to download the latest MTP Writer System software.



1.1.1 Writer Main Board

The Writer Main Board connects to the host computer through the printer port and the interface cable. It houses the components that allow you to program or read DIP, COB and die form IC's.

Connections to power and host computer are also provided from this main board.

1.1.2 The PCI Sub-Boards

These two mini-boards house the circuitry that accommodates the corresponding circuitry of the IC under programming. They also act as keys that allow you to access and program the correct chips.

Sub-board EM55M300/EM73MA89B must be inserted into the Writer Main Board when programming EM55M300 or EM73MA89B chips.

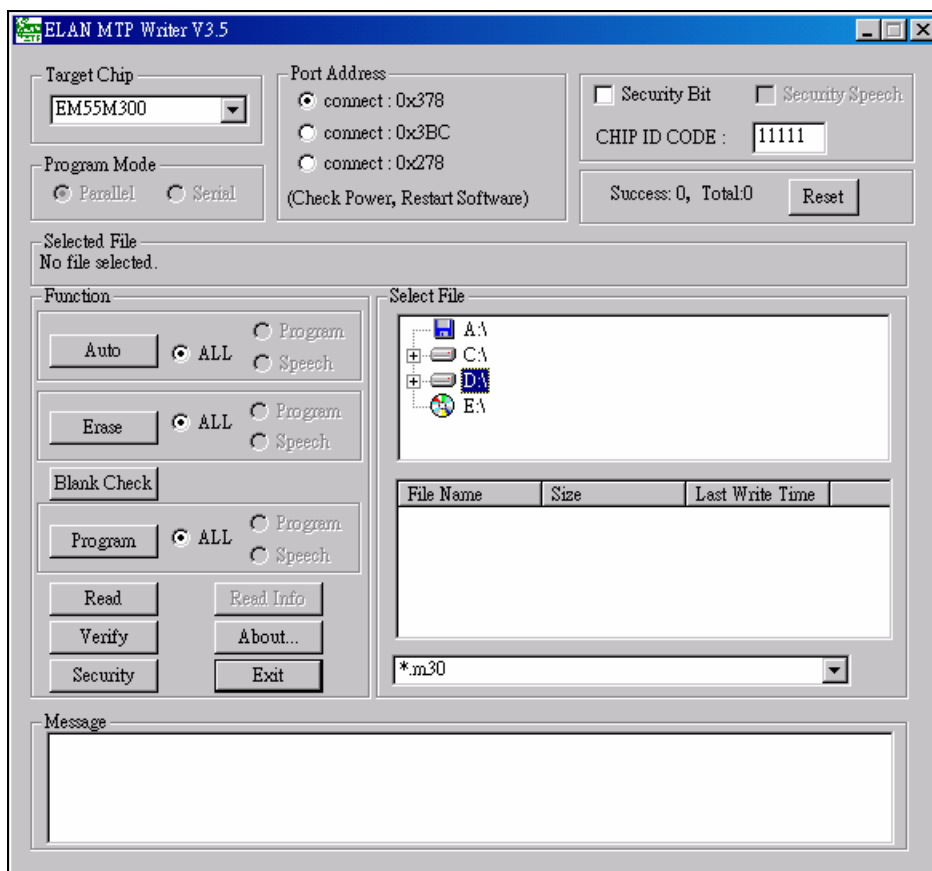
Sub-board EM55M450 is inserted when programming EM55M450 and eSTM060. The sub-board is also required when reading data from EM55Q450 and eSTQ060.

1.1.3 Chip-on-Board (COB) Socket Adapter

The ELAN provided COB Socket Adapter which connects to the JS2 Connector of the Main Board is applicable only to COB's purchased from ELAN.

Refer to Chapter 2, Section 2.2.4 for connecting user's designed COB to JS2 Connector of the Writer Main Board.

1.2 Introduction to MTP Writer Driver



MTP Writer Software Main Window

The MTP Writer System driver is a single windowed writer program, specifically designed for the MTP Writer Main Board functions. It runs under Win95/98, WinME, Win2000, WinNT, or WinXP environment. The program performs the following functions as indicated in each dialog pane of the window:

IMPORTANT!

*If you are using Win2000, WinNT, or WinXP, you need to initially install **PORT95NT.EXE** before running the MTP Writer System driver. Visit ELAN website (<http://www.emc.com.tw>) to obtain the file (see Section A.4 of Appendix A for details on accessing the "Supporting Tools" folder of the website).*

Target Chip Selects the appropriate Target MTP chip (EM55M300, EM73MA89B, EM55M450, EM55Q450, eSTM060, or eSTQ060) from the list box.

Program Mode Selects the programming mode from the Writer to the chip. Default is Parallel Mode. Change to Serial Mode only if target chip is EM55M300.



- Port Address** Selects a printer port address. The MTP Writer driver will auto-detect the existing printer Port Address every time the software is launched. You may change the Port Address setting as needed.
- (SPP/EPP mode, Connect OK)** This message will display at the bottom of **Port Address** window when the Writer driver successfully links with the Writer Main Board. Otherwise, error message (*Check power, Restart software*) will display.
- Security Bit** Enable the program Security Bit check box (default is disabled) if the feature is required during the programming process of EM55M450, eSTM060, or EM73MA89B chip. The security bit cannot be programmed independently under this feature.
- Except for ID code, all other data cannot be accessed when chip is programmed with Security Bit enabled.
- This check box does not apply to EM55M300 chip (see **Security** Function Button next page).
- CHIP ID CODE** Enter an optional ID code to be programmed with the chip in the edit box. With EM55M450 or eSTM060, the entered code will be treated as User ID code.
- Success:** Counts the number of successful programming (Success) and
Total: the total number of attempted programming (Total). The counter will update whenever the **Auto** or **Program** button (in the **Function** pane) is pressed. The maximum number each counter could accommodate is 99999. It will return to 0 when overflow occurs. Both counters will reset to 0 by clicking the **Reset** button.
- Selected File** Displays the full pathname of the program source file to be written into the chip. You can browse for the file from the **Select File** window, which consisted of three panes; i.e., the Directory selector, File selector, and the Extension filter. The selected file is displayed in the **Selected File** window with its full pathname.
- Refer to Section 1.2.1 on source file generation formats for each of the supported chips.
- Auto** Clicking this button will automatically erase all chip contents, followed by the blank checks function to verify that the chip is empty, and then writes the program into the chip. Error message will display if source file is not pre-selected.
- Erase** Click this button to erases all contents of the chip. Note that this does not apply to EM55Q450 or eSTQ060chips.

Blank Check Click this button to perform blank check on the chip to verify
Function Button that it is empty.

Program Click this button to program the target chip together with
Function Button code, chip ID (if defined), and security bit (if selected). The MTP Writer driver will perform a blank check on the chip before programming. If the blank check failed, programming is aborted. Error message will display if source file is not pre-selected.

Read Click this button to read data from programmed chips. The
Function Button contents are displayed in hexadecimal format in a pop-up window. If the source file is selected (as shown in the **Selected File** display box) its file contents are also displayed on the same pop-up window for your visual data comparison reference. To make Writer perform comparison for you, click the **Verify** button (see below). If the security bit is set, all data will be shown as “00.”

This feature cannot read data from the factory programmed EM55Q450 and eSTQ060 chips. This chip is security protected (see **Read Info** function button below for reading chip info).

Verify This is similar to **Read** button, except that Writer will
Function Button additionally perform data comparison function. It reads data from the chip and compares them with a selected source file, byte by byte. If inconsistencies are found, the inconsistent addresses are shown in the **Message** window.

Security Programs the security bit only. This applies to EM55M300
Function Button only where the security bit can be programmed independently without having to reprogram the whole chip.

Read Info Click this button to read chip information from EM55M450,
Function Button EM55Q450, eSTM060, and eSTQ060

With EM55Q450 and eSTQ060, this function reads and displays the customer ID number of the chip only. When used on EM55M450 and eSTM060, it also reads checksum (pass, no pass only) in addition to the user ID.

To read the programmed data, use the **Read** button above. The information is displayed in the **Message** window.

This button does not apply to EM55M300 and EM73MA89B chips as their respective customer numbers are already displayed together with the programmed data using the **Read** button above.



About Information about the MTP Writer System driver.
Function Button

Exit Close the MTP Writer System driver.
Function Button

Message Displays all messages pertinent to the status of the recently
Window executed function button.

1.2.1 User Source File Format

For EM55M300 and EM55M450 chips, the source files must be generated from ELAN's EM55000 Series IDE coding program Version 2.0 or above, and verified using the EM55000 Emulation Board/Verification Module Assembly (EMK-U/EMM55000 assembly described in the *EM55000(S) IDE Series User's Guide*). The resulting files will have file extensions that correspond with the target chip type:

CHIP TYPE	FILE EXTENSION	DESCRIPTION
EM55M300	USERFILE1.m30	Generated from EM55300 only
EM55M450	USERFILE1.m45	Generated from EM55001 to EM55450
EM73MA89B	USERFILE1.mtp	Generated from 4-bit WEDS IDE.

For eSTM060 chip, the source files must be generated from ELAN's eST/eSE Series IDE coding program Version 1.0 or above, and verified using the eST Emulation Board/Verification Module Assembly (EMK-U/EMMeST assembly described in the *eST/eSE IDE Series User's Guide*). The resulting file is as shown below:

CHIP TYPE	FILE EXTENSION	DESCRIPTION
eSTM060	USERFILE1.m45	Generated from eST003 to eST061

Chapter 2

System Installation

2.1 System Requirements

2.1.1 Host Computer

The MTP Writer System requires a host that meets the following configuration:

1. IBM PC or compatible computer (Pentium 100 or greater recommended)
2. Runs under WIN95/98, WinME, WinNT, or WinXP

NOTE

*If you are using Win2000, WinNT, or WinXP, you need to initially install **PORT95NT.EXE** before running the MTP Writer System driver as noted under Section A4 of Appendix A.*

3. 10MB free hard disk space and 16MB RAM
4. Mouse is optional but highly recommended

2.1.2 External Power Source

Requires power source of +15.0VDC , 800mA (power adapter) to provide power for Writer Main Board.



NOTE

Use of ELAN provided AC power adapter is recommended.

2.1.3 Printer Port Cable

Standard 25-pin with DB-25 male connector at one end and DB-25 female connector at the other end. Length of cable should not exceed two meters (6.6 feet)

NOTE

Use of ELAN provided printer cable is recommended.

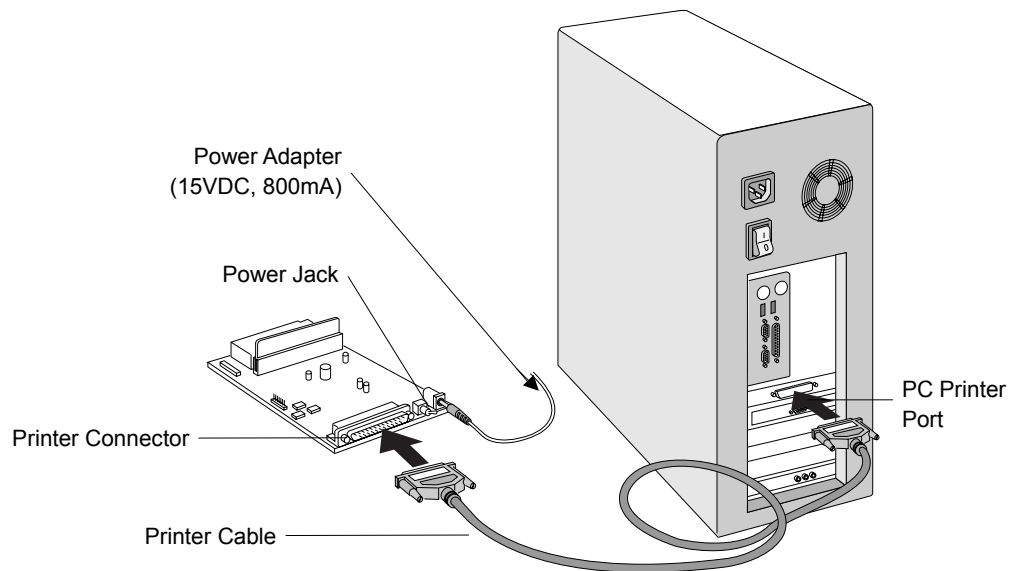
2.2 Hardware Installation and Setup

NOTE

Unless otherwise recommended, switch OFF power while mounting or removing modules to and from the Writer Main Board.

2.2.1 Connecting Main Board to Host Computer and Power Source

- Plug the DB-25 male connector of the Printer Cable to the Writer Main Board and female connector to the printer port of your host computer.
- With the Main Board power switch at **OFF** position, plug the power jack of the power adapter to the Main Board power connector and plug the adapter to a power source.



Connecting MTP Writer Main Board to Host Computer

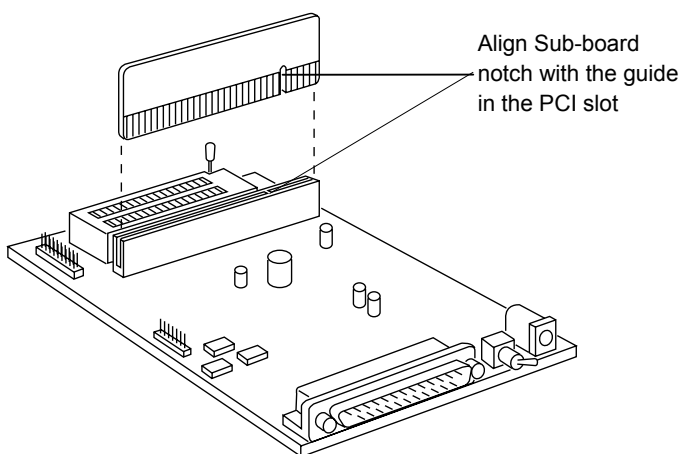
2.2.2 Mounting PCI Sub-Boards on the Writer Main Board

When programming EM55M300 and EM73MA89B chips, insert sub-board EM55M300/EM73MA89B into the PCI slot on Writer Main Board. If target chip is EM55M450 or eSTM060, insert the Sub-board EM55M450.

The sub-board EM55M450 must also be mounted in the PCI slot when reading data from EM55Q450 or eSTQ060.

NOTE

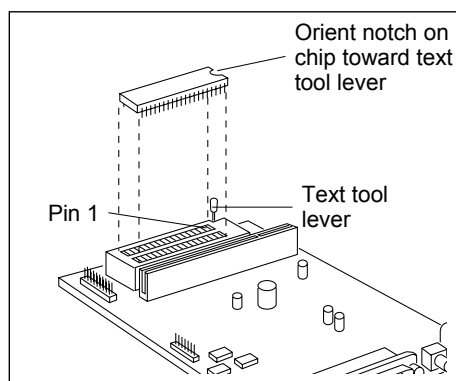
Align notch on the PCI sub-board with the corresponding guide in the PCI slot for proper pin alignment.



Mounting and Aligning PCI Sub-Board into the PCI Slot

2.2.3 Mounting DIP Chip on the Main Board Text Tool

When mounting a DIP target chip, make sure that the chip is positioned in such a way that its notch is on top (oriented toward the text tool locking lever). This position ensures that the pin numbers of both chip and the text tool are aligned. Otherwise, the Writer System will not function properly.



Mounting and Aligning DIP Chip on Text Tool

NOTE

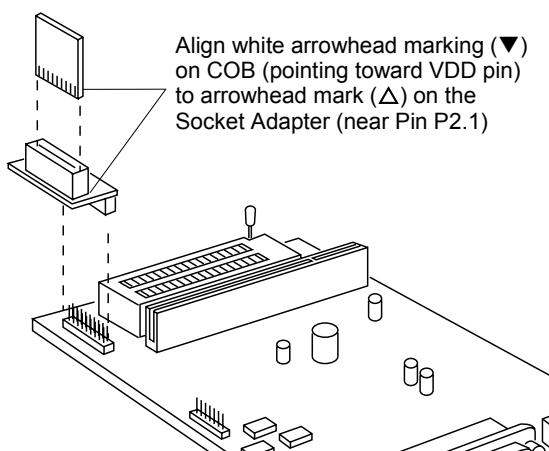
It is recommended to install the target Dip chip only after running the MTP Writer software to preclude damage from power surge.

2.2.4 Mounting ELAN's COB to the Main Board JS2 Connector

Use the ELAN provided COB Socket Adapter to install COB's purchased from ELAN. The adapter is easy to install, as it will not get inserted into the JS2 Connector at incorrect position. The ELAN's COB however may get incorrectly inserted into the socket adapter and caused pin misalignment which will result to error readings. Hence the COB and the socket adapter are each marked with a white arrowhead. These white arrows must be aligned before inserting the COB into the socket adapter.

NOTE

It is recommended to install the target Dip chip only after running the MTP Writer driver to preclude damage from power surge.



Proper Position of COB to Achieve Proper Pin Alignment During Installation

2.2.5 Connecting User's COB to the Main Board JS2 Connector

User's COB die test pins should be designed to conform to the following JS2 Connector pin assignment. Visit ELAN website for the target chip pin assignments:

D0	□	□	D1
D2	□	□	D3
D4	□	□	D5
D6	□	□	D7
VDD	□	□	OEB
VPP	□	□	ACLK
VNN	□	□	PGMB
GND	□	□	DCLK
RDY	□	□	R1
R2	□	□	R3

JS2 Connector Pin Assignment for COB

JS2 Pins	EM55M300	EM55M450/Q450 eSTM060/Q060	EM73MA89	JS2 Pins	EM55M300	EM55M450/Q450 eSTM060/Q060	EM73MA89
D0	P2.0	P2.0	P4.0	D1	P2.1	P2.1	P4.1
D2	P2.2	P2.2	P4.2	D3	P2.3	P2.3	P4.3
D4	P3.0	-	P8.0	D5	-	-	P8.1
D6	-	-	P8.2	D7	-	-	P8.3
VDD	VDD	VDD	VDD	OEB	P3.2	P3.2	P0.2
VPP	VPP	TEST/VPP	VPP	ACLK	OSCI	P3.3	P0.0
VNN	VNN	-	VNN	PGMB	P3.1	P3.1	P0.1
GND	GND	GND	GND	DCLK	P3.3	OSCI/CLK	P0.3
RDY	-	P3.0	-	R1	-	-	-
R2	-	-	-	R3	-	-	-
		CIN *					

* CIN pin: When programming EM55M450 COB or eSTM060 COB, a 104 (0.1uF) capacitor must be connected to GND for charge pumping. The PCI sub-board EM55M450 or eSTM060/Q450 provided by ELAN is already equipped with this capacitor

WARNING !

1. Except for EM55M450 or eSTM060, do not connect any component, such as resistor, capacitor, or keyboard on the COB board.
2. Any external wiring connection between your COB and the Writer Main Board should not exceed 12 cm (6 inches) long.
3. It is recommended to install the target COB only after running the MTP Writer software to preclude damage from power surge.

2.3 MTP Writer System Driver Installation

The latest version of the MTP Writer system software is available from the ELAN's website (<http://www.emc.com.tw>) under **Products** button.

Then click on **Consumer Line** ➔ **EM55 Series** ➔ **Supporting Tools** ➔ **Product** under which the Writer software is located as illustrated below.

You may either download the files to your disk or directly install from the website.



Products

Telecom Line Consumer Line Microcontroller Line PC Peripheral Line LCD Driver Line

Consumer Line

Product							
Product Spec.	Introduction	Compile Software	Kernel Driver	Note	User Guide	ICE User Guide	Description
EM55000		V2.3	-	-	-	-	-
EM55M450	-	V3.5	-	-	-	-	-

Click to download or install the Writer driver

MTP Writer Software Location Within the ELAN Website

Chapter 3

Getting Started with MTP Writer System

3.1 Host Computer Parallel Port Setting

The MTP Writer System supports two modes of user programming:

- Standard Parallel Port (SPP) mode
- Enhanced Parallel Port (EPP) mode,

Define the desired mode from the PC BIOS parallel port setting. EPP mode programming time is faster than SPP mode. Older PC's may not support EPP mode, hence, it could only work under SPP mode.

3.1.1 PC BIOS Setting Standard Method

Enter PC BIOS → Integrated Peripherals (or Chipset Features Setup...) → Parallel Port Mode → SPP (or EPP) mode

NOTE

Do not select other modes, such as ECP and ECP+EPP.

3.2 Launching MTP Writer System Driver

WARNING!

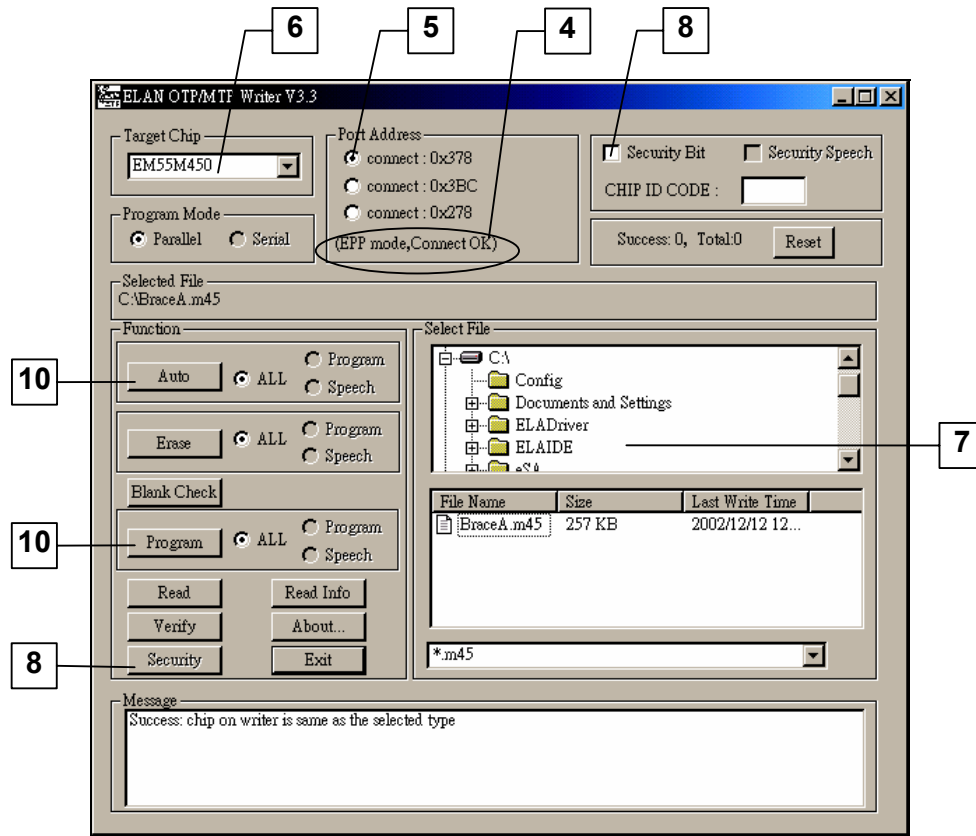
Before trying to run the Writer System hardware and software, the Writer Main Board test tool should be free from any target chip and the JS2 Connector free from any COB.

*Make sure the Main Board is properly connected to your host computer and to a power source but has its power switch at **OFF** position.*

To prevent possible damage to your target chip, follow the steps below according to its sequence.

1. Insert the appropriate PCI Sub-board that corresponds with your target chip/COB.
2. Power **ON** the Writer Main Board.
3. Run your host computer and quit all other programs that accessed the printer port. If you have not performed BIOS Parallel Port setting (see Section 3.1 above) yet, do it now.

4. Launch the MTP Writer System driver. Observe link status with the Writer Main Board. If successful, “*EPP mode, Connect OK*” will display from the **Port Address** window.



MTP Writer System Driver Main Window

5. From the Main Window, select the printer **Port Address** if the default is not acceptable.
6. Select the MTP **Target Chip** or COB type to be programmed.
7. Select the program binary source file to be downloaded.

NOTE

Refer to Section 1.2.1 of Chapter 1 for the correct source file format.

8. When required, enable **Security Bit** check box if target chip is EM55M450, eSTM060, or EM73MA89B. If target chip is EM55M300, click **Security** button (default is security disabled).

9. Insert the target DIP chip on the Main Board text tool as described in Chapter 2, Section 2.2.3. If your target is an ELAN COB, install it to JS2 Connector according to Section 2.2.4. Refer to Section 2.2.5 if you are using a user designed COB.

NOTE

Make sure that the target pins are properly aligned with text tool or JS2 Connector.

10. Run the **Auto** or **Program** function (see Chapter 1, Section 1.2 for the difference between the two functions and the details of the other functions shown in the window).
11. Turn off power to the Writer Main Board after you quit the MTP Writer system software.



Appendix A

Frequently Asked Questions (FAQ)

A.1 What to do when link to Writer fails?

1. Check cable between PC and Writer for loose connection. Try changing cable.
2. Check PC parallel port address for accuracy.
3. Quit software, turn OFF, and then turn ON the Writer hardware power. Run the software again.
4. Incompatible PC. Try changing another compatible IBM-PC.
5. Check Writer Main Board for possible defects, e.g., loose soldering.

A.2 What to do when erase command always fails?

1. Quit software. Turn OFF and then turn ON the power of the Writer Main Board. Run Writer software again.
2. MTP IC maybe defective. Its data cannot be fully erased. Try changing another chip.
3. Check connection between MTP IC programming pins and Writer Main Board for loose contacts.
4. Check power adapter (output should be +15V, 800mA). Try changing power adapter with the one provided by ELAN.
5. Incompatible PC. Try changing another compatible IBM-PC.
6. Check H/W PCB for possible defects, e.g., loose soldering.
7. Check the PCI Sub-board for loose contacts.

A.3 How to shorten the programming time?

Select EPP mode of parallel port from PC BIOS setting.



A.4 My PC is operating under WinNT (Win2000 or WinXP), but I cannot run the MTP Writer driver?

If you are using Win2000, WinNT, or WinXP, you need to initially install **PORT95NT.EXE** before running the MTP Writer System driver.

The file is available from the ELAN's website <http://www.emc.com.tw> under **Products** button. Then click on **Consumer Line** → **EM55 Series** → **Supporting Tools** where the **PORT95NT.EXE** is located.

Download the file to your PC and install from your local disk. Run **PORT95NT.EXE** before launching the MTP Writer driver.